

INTERSTATE COMMERCE COMMISSION

REPORT OF THE DIRECTOR OF THE BUREAU OF SAFETY IN RE
INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE
TONOPAH AND TIDEWATER RAILROAD NEAR SODA, CALIF.,
ON AUGUST 5, 1929.

November 23, 1929.

To the Commission:

On August 5, 1929, there was a derailment of a mixed train on the Tonopah and Tidewater Railroad near Soda, Calif., which resulted in the death of two employees.

Location and method of operation

This accident occurred on the First District, which extends between Ludlow and Death Valley Junction, Calif., a distance of 122.01 miles, and is a single-track line over which trains are operated by time-table and train orders, no block-signal system being in use. The accident occurred at bridge 36-A, located 1,364 feet north of mile post 36, which in turn is located 2.66 miles north of Soda. The track is tangent for several miles in each direction and the view is unobstructed. The grade is level at the point of accident. The track was laid with 65-pound rails, 30 feet in length, with 16 pine ties to the rail-length, single-spiked, and ballasted with gravel to a depth of from 14 to 16 inches.

Bridge 36-A was a two-span, deck-ballasted bridge, 20 feet 6 inches in length, supported by three 4-post framed bents with 10-foot centers, six stringers, a ballast deck, and outside guard rails, with 8 inches of ballast under the ties and filled in with ballast to the tops of the ties. The wings extended a distance of 18 feet from the bulkheads and 8 feet from the track. This bridge was constructed in August, 1911. Approaching the bridge from the south there is a fill from 4 to 6 feet in height, the fill on the north side of the bridge being about 4 feet. The banks of the stream just east of the bridge were about 2 or 3 feet in height.

There had been a severe thunder-storm and cloudburst in the Soda Lake Mountains, located about 5 or 6 miles west of the track, late in the afternoon of August 4, the afternoon previous to the occurrence of the accident, and also a storm of a general character to the south of, and in the vicinity of bridge 36-A.

The weather was clear at the time of the accident, which occurred between 7:45 and 7:50 a.m.

Description

Northbound mixed train No. 25 consisted of seven loaded and eight empty freight cars, and one combination baggage car and coach, hauled by engine 7, and was in charge of Conductor Trenkle and Engineman Quinn. Train order No. 1, Form 31, was received at Ludlow, reading as follows:

"Run with care at all points where water would soften or wash track in event of thunder showers or cloudbursts. Run slow and careful between Mile Post 30 and Soda where water has been running over track."

Mile post 30 is located south of Soda, Train No. 25 departed from Ludlow at 5:40 a.m., 10 minutes late according to the train sheet, passed Soda, at 7:35 a.m., 30 minutes late, and while traveling at a speed estimated to have been between 20 and 25 miles per hour was derailed near mile post 36 due to bridge 36-A having been washed out.

The engine came to rest with its front end on the north embankment, with the tender in reverse position to the right or east of the engine, both being badly damaged. The first four cars were scattered in various positions in the creek bed, considerably damaged; the fifth car was derailed to the left or west, on the south embankment. The remaining equipment was not derailed. The employees killed were the engineman and fireman.

Summary of Evidence

Due to the rain storm on the day previous to the occurrence of the accident, there was a heavy rush of water that came down from the mountains west of the track, which eroded the north and south banks of the stream to a depth of from 3 to 5 feet at points within 1,500 feet of bridge 36-A. In addition to this heavy stream that came down the arroyo there was a distinct evidence of a stream coming from the north and cutting a water course on the west side of the track from culvert 36-B, located 1,466 feet north of bridge 36-A. The converging of these two streams at the north bulkhead of bridge 36-A undermined that bulkhead and the embankment north of the bridge; and, as the flow of this heavy stream continued, the stream bed under the bridge was scoured out to a depth of 5 or 6 feet, causing the bridge structure proper to fall into the stream bed and float away to a point about 50 feet east of the track. A small portion of the original ballast remained on the deck of the bridge. The erosion and scouring of these streams widened the channel spanned by bridge 36-A to a width of 60 feet.

Conductor Trenkle stated that upon leaving Ludlow he had a copy of train order No. 1 and a clearance card; his train set out and picked up cars at several points en route, proceeded slowly from mile post 30 through the

stretch of bad track to Soda, as required by the train order, and from that point northward the train picked up speed, as the track looked safe, and had attained a speed between 20 and 25 miles per hour when the accident occurred. He was riding in the coach at the time of the accident, and had not noticed any prior application of the air brakes. Conductor Trenkle stated that he had talked with Trainmaster McPhee at Ludlow relative to track conditions and also with the track walker at Rasor, which is located 3.94 miles south of Soda, who told him the section men were out looking over the track where water had run over it a couple of miles north of Rasor, and when his train passed Soda he felt that they were out of the danger zone. He had never seen water running under bridge 36-A, and at the time of the accident there was no running water in the creek bed - only water and oil from the train. He was of the opinion that the bridge as it rested after the washout, 50 feet or so from the track, was a little too low to be seen from the engine, saying that at times there is a pile of ties lying there that could be taken for a bridge. He thought, however, that if standing on a level with the engine cab he could have seen the bridge a distance of 400 or 500 feet had he been looking for it. Conductor Trenkle said he last talked with the engineman at Rasor, at which time the engineman did not say that anything was wrong with the engine which would in any way distract his attention. He had worked with him about eight years and considered him a first-class engineman - one that was careful.

Roadmaster Horton stated that in addition to his duties as roadmaster he has charge of bridges and buildings. He was on train No. 25 on the morning of the accident, and before leaving Ludlow he had been told by the trainmaster that water had been reported running over the track between Rasor and Soda. This was his first knowledge of any dangerous conditions and when they reached that territory he was riding on the rear platform of the last car in order to observe the conditions, and saw the section men making repairs. North of Soda he observed water on the west side of the track and some of it running through culverts toward Soda Lake on the east side of the track; there also was a small cave-in on the west side of the track at one of the culverts about 1/2 mile south of the point of accident. He stated that he was standing on the coach steps looking ahead when the derailment occurred; he immediately went to the head end of the train and after rendering what assistance he could, he noticed that the water had scoured out a hole under the bridge bents 4 or 5 feet in depth, which caused the bridge to collapse, and it was his opinion that the track itself had sagged from 4 to 6 inches, possibly more. There was extensive erosion of the banks on the north and south sides of the stream, but more especially on the north side, and this scouring and erosion was caused by two streams coming from the west and north, converging at the north bulkhead of the bridge, as the greater portion of track embankment was washed away on the north side, the width of the

arroyo, having increased from about 21 feet to approximately 60 feet. From his knowledge of conditions he was of the opinion that there had not been enough water in the immediate vicinity to have washed out the track and that it came from the mountains about 5 miles to the west, and he did not think the full force of the water could have reached the bridge before midnight. He further stated that he had never noticed water running under this bridge since its construction in 1911; he considered it a dry arroyo, although previous to that time there had been water in the vicinity. This bridge had been last inspected on July 23. Roadmaster Horton further stated that on his way to the head end of the train after the occurrence of the accident he noticed a hole 6 or 7 feet across, on the east side of the track at culvert 35-B, located 1,043 feet south of bridge 36-A; this was plainly visible from the engineman's side. Roadmaster Horton had issued instructions to section foremen at different times to the effect that they were to patrol the track during stormy weather and to take no chances whatever, and upon an investigation he found that the track in the vicinity of the point of accident had not been properly patrolled in this instance. The last train to go over this bridge was train No. 26 on the evening of August 3, and the track walker, had passed over that section of track northward from Rasor on August 4, the morning previous to the occurrence of the accident.

Mr. H. P. Gower, a passenger on train No. 25 at the time of the accident said he had lived in the desert country about 16 years. There was evidence of a very severe rain storm for several miles north of Rasor; the storm had been over the whole vicinity although undoubtedly the largest amount of water had come down from the mountains, as there were new freshly-washed water courses, but it also had rained along the track, because he saw where an automobile had come up onto the track, the road being flooded, and had proceeded along for 2 miles or more on the right of way, making deep ruts in places. He estimated the speed of the train at the time of the accident to have been between 20 and 25 miles per hour. He then assisted in getting the engineman and fireman out of the wreckage; the engineman was dead but the fireman lived about 20 minutes and according to Mr. Gower he told the fireman they had run into an open bridge and asked the fireman if he had seen anything, to which he replied in the negative.

Section Foreman McDonald, located at Rasor, stated that his section extends between mile post 15 and mile post 34, the latter being at the northern end of the section. On the afternoon previous to the occurrence of the accident there was a light rain at Rasor and there had been a cloudburst in the mountains west of the track. He patrolled his entire section that afternoon and found the first indication of rain on his way northward between mile post 32 and mile post 33; at 10:30 p.m. that night, accompanied by Track Walker Edwards, he again went to the north

end of his section and found water standing on the west side of the track north of mile post 34, but there was no running water. At 6 a.m. the next morning he reported to Trainmaster McPhee at Ludlow that there had been a cloudburst on Sunday evening, that water had carried some dirt onto the track, that there was a little washout at bridge 32-A, but that the track had been cleared was protected by slow flags, and was safe at a reduced speed.

Track Walker Edwards, whose district extends between Ludlow and Rasor, stated that he went with Section Foreman McDonald to mile post 34 on Sunday evening and at that time it was quite dark and they could not see much. The next morning he telephoned the trainmaster at Ludlow and told him to give slow orders, as the track was in bad shape from mile post 30 to Soda - that water had been over the track. He also said that when train No. 25 arrived at Rasor that morning he told Engineman Quinn that the track was in bad shape that water had been over the track, and to go slow up to mile post 34. That was as far as he and Section Foreman McDonald had gone and he could not say anything about conditions beyond that point. He said he also talked with Conductor Trenkle.

Section Foreman Allen, located at Baker 8.48 miles north of Soda, whose section extends from mile post 34 to mile post 52, which includes the territory on which the accident occurred, stated that there had been a light rain at Baker on Sunday, that there was no water on the track and he did not think it necessary to go over his section that night, having talked with the track walker who passed through Baker on Sunday on his way north to Riggs. On Monday morning he patrolled his section as far south as mile post 38 arriving at that point about 7 a.m. The track looked all right; there was a little water on the ties, but it was running very slowly. He then looked down toward mile post 36 and as everything seemed all right and in a safe condition, he returned northward to a point about 4 miles north of Baker, as it had been raining heavily in the hills; there was a black cloud to the north and the possibility of a storm was greater to the north than to the south. He further stated that he had been in charge of this section for 15 months and that he had never seen water running under bridge 36-A and had never experienced any trouble with washouts on his section.

Trainmaster McPhee, who is also chief dispatcher, stated that he went on duty at 5 a.m. on August 5, turned to the transfer made at 11 p.m. the previous night, and found there were no orders, but a specific notation "All section foremen to patrol track in a.m." signed by the second trick dispatcher. The office was closed from 11 p.m. Sunday night until he opened it the following morning, there being no trains during that time. He then turned to the train sheet and noted there were no alarming weather conditions. He then received a telephone message from

Track Walker Edwards reporting the conditions between Mile Post 30 and Soda, and advising him to issue a slow order which he did and he said he gave a copy of it to train No. 25. At 6 a.m. he received a telephone call from Section Foreman McDonald, who told him there had been a little cloudburst between mile post 30 and bridge 32-A, that the water had run some dirt on the track and that there was a little washout at bridge 32-A but that it was safe and the track was clear. The next report he received was of the occurrence of the accident. The only other message he received relative to rain was one received from the section foreman at Riggs on Sunday reading "Report everything is O.K. between mile post 52 and 72. Looks like rain east of Valjean. Will patrol in the morning ahead of train." Riggs is located 26.13 miles north of Soda and Valjean is 5.64 miles north of Riggs. As he received no report from Baker he took it for granted that everything was all right on that section.

Chief Clerk Brown, who previously had been a telegraph operator, stated that about 7:30 or 8 p.m. on August 4, at the request of Superintendent Cahill, he telegraphed as to weather conditions and the agent at Crucero, 7.66 miles south of Soda, reported a light sprinkle, and the agent at Silver Lake, 16.69 miles north of Soda, reported that it had been raining very hard for about an hour and the rest of the time there had been a light sprinkle.

Conclusions

This accident was caused by a washout.

The evidence indicates that on Sunday, the afternoon previous to the occurrence there had been a severe rain storm in the mountains west of the vicinity in which this accident occurred, and also a rain storm of a general character in the immediate vicinity, which resulted in an unusual amount of water coming from the west and north, scouring out the stream bed and undermining the north bulkhead and the track embankment north of the bridge, causing the bridge to fall into the stream bed and float to a point about 50 feet east of the track.

The operating rules of this railroad require section foremen or one of their men, to patrol their entire sections daily, Sundays included. Section Foreman Allen in charge of the section on which this accident occurred, was at Baker on Sunday, August 4, and talked with the track walker who passed through on his way north. On Monday morning, August 5, he patrolled his section as far south as mile post 38, and then started back north, leaving 4 miles of track at the south end of his section that had not been patrolled. There is only one scheduled train daily, No. 25 on Monday, Wednesday, and Friday, and No. 26 on Tuesday, Thursday and Saturday, and in view of the fact that train No. 25 would be the first train to pass over his section,

and was coming from the south, a thorough inspection of the track to the southern limits of his section, or to mile post 34, was his paramount duty; if this requirement had been fulfilled, the washed-cut bridge would have been discovered and this accident averted.

It is doubtful if the track structure had sagged enough to cause it to be noticeable from an approaching engine, and it is probable that the washed-out holes on each side of the roadbed approaching the point of accident would have been a better indication to the engine crew that they had not yet passed through the storm zone. It is apparent, however, that after passing through the territory where water had run over the track between mile post 30 and Soda, Engineman Quinn concluded that he was out of the storm zone and increased the speed of his train to 20 or 25 miles per hour, and even had he observed the washed-out bridge lying in the stream bed 50 feet from the track, it is questionable if he could have stopped in time to prevent his engine from falling into the stream bed.

The employees involved in this accident were experienced men and at the time of the accident none of them had been on duty in violation of any of the provisions of the hours of service law.

Respectfully,

W. P. BORLAND,

Director.